What is claimed is:

1.   A data sort method of rearranging records according to a specified sort key item in an ascending/descending order, comprising:

an automaton generating step of generating an automaton for receiving a character string of a sort key item of each record, and for associating a record identifier with a final transition state; and

an order value tuple generating step of generating an order value tuple which is a set of a record identifier of the record and an order value which is obtained by arranging the records in an ascending/descending order by scanning the automaton.

2.   A data sort apparatus which rearranges records according to a specified sort key item in an ascending/descending order, comprising:

an automaton generating unit generating an automaton for receiving a character string of a sort key item of each record, and for associating a record identifier with a final transition state; and

an order value tuple generating unit generating an order value tuple which is a set of a record identifier of the record and an order value which is obtained by

arranging the records in an ascending/descending order by scanning the automaton.

3.   A data sort program for directing a computer to

5   perform a data sorting process of rearranging records according to a specified sort key item in an ascending/descending order, comprising:

an automaton generating step of generating an automaton for receiving a character string of a sort

10 key item of each record, and for associating a record identifier with a final transition state; and

an order value tuple generating step of generating an order value tuple which is a set of a record identifier of the record and an order value which is obtained by

15 arranging the records in an ascending/descending order by scanning the automaton.

4.   A computer-readable storage medium storing the program according to claim 3.

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5.   The data sort method according to claim 1, wherein there are a plurality of sort key items, and said order value tuple is a set of a plurality of order values and a record identifier.

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6.   The data sort method according to claim 1, further comprising:

a sort table generating step of generating a sort table on which the order value tuples are arranged in
5   a predetermined order.

7.   The data sort method according to claim 6, wherein in said sort table generating step, a sort order sort table on which order values are arranged in an
10   ascending or descending order is generated.

8.   The data sort method according to claim 6, wherein in said sort table generating step, a record order sort table on which record identifiers are arranged in
15   an ascending or descending order is generated.

9.   The data sort method according to claim 8, wherein there are a plurality of sort key items, and a record order sort table is generated based on a plurality
20   of order value tuples which is a set of a plurality of order values and a record identifier, and further comprising:

an automaton generating step of generating an automaton for assuming that a row of a plurality of order
25   values of the record order sort table is a character

string belonging to the record identifier, and receiving the character string as a plural order value key character string for all tuples on the record order sort table; and

5   a general order value tuple generating step of scanning the automaton, and generating a general order value tuple which is a set of the record identifier and a newly ordered general order value as a general order for the plurality of sort keys.

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10.   The data sort method according to claim 1, further comprising:

          a record identifier setting step of recording a tuple for association between a starting address of a 15   record and a record identifier for identification of the record for each record read from input data.

11.   The data sort method according to claim 1, further comprising:

20   a key data preprocessing step of converting input sort key item data into a key character string appropriate for said automaton generating step according to a key condition relating to a sort method for each specified sort key item.

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12.   The data sort method according to claim 5, further comprising:

a sort table generating step of generating a sort table on which the order value tuples are arranged in a predetermined order.

13.   A data sort apparatus which rearranges records according to a specified sort key item in an ascending/descending order, comprising:

automaton generating means for generating an automaton for receiving a character string of a sort key item of each record, and for associating a record identifier with a final transition state; and

order value tuple generating means for generating an order value tuple which is a set of a record identifier of the record and an order value which is obtained by arranging the records in an ascending/descending order by scanning the automaton.